DOCUMENT RESUME

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ABSTRACT

One of a series of pre-apprenticeship phase 1 training modules dealing with math skills, this self-paced student module covers the concept of percent. Included in the module are the following: cover sheet listing module title, goals, and performance indicators; introduction; study guide/check list with directions for module completion; information sheet; self-assessment; self-assessment answers; and post assessment. Emphasis of the module is on providing skills necessary for such operations as estimating costs, discounts, and profits as well as for calculating proportions. (Other related pre-apprenticeship phase 1 training modules are available separately--see note.) (MN)

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ED217288

INDIVIDUALIZED LEARNING SYSTEMS

PRE-APPRENTICESHIP PHASE 1 TRAINING

MATH

PERCENT

ED329924

Goal:

The student will know the necessary math concepts in percent to enable him or her to compute math problems in which these concepts are used.

Performance Indicators:

Given a series of math problems in the Self Assessment and Post Assessment portions of this module, the student will be able to successfully compute the answers.

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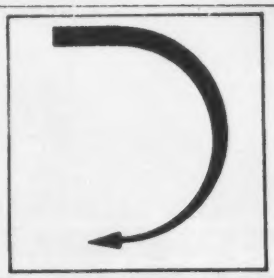
Introduction



The word "percent," an abbreviation of the Latin "per centum," literally means "for each hundred" or "by the hundred." "Percentage" means the methods of expressing a part of a whole as hundredths of the whole. Thus, 12 percent means 12 parts of a whole that is thought of as consisting of 100 such parts; 100 percent means all 100 parts of the whole taken together; and 108 percent means all 100 parts of the whole plus 8 more such parts.

Since percents are expressions of the parts of a whole, they can be converted to common fractions or decimals: 12 percent is equivalent to 12/100 or 0.12; 100 percent is equivalent to 100/100 or 1.0; and 108 percent is equivalent to 108/100 (1-8/100) or 1.08. It can be seen that percents greater than 100 become mixed numbers in such conversions.

Skill in working with percents is necessary for estimating costs, discounts, and profit margins, and it is very useful in calculating proportions, for example in determining the relative amounts of materials needed for fluid mixture of a given composition.

Study Guide

This study guide is designed to help you successfully complete this module. Check off the following steps to completion as you finish them.

STEPS TO COMPLETION

1. ____ Familiarize yourself with the Goal and Performance Indicators on the title page of this module.

2. ____ Read the Introduction and study the Information section of the module. It is intended to provide you with the math skills necessary to sucessfully complete the assessment portions.

3. ____ Complete the Self Assessment section of the module. You may refer to the Information section for help.

4. ____ Compare your Self Assessment answers with the correct answers on the Self Assessment Answer Sheet immediately following the Self Assessment exam. If you missed more than one of the Self Assessment exam questions, go back and re-study the necessary portions of the Information section, or ask your instructor for help. If you missed one or none of these problems, go on to step 5.

5. ____ Complete the Post Assessment section of this module. Show your answers to the instructor. It is recommended that you score 90% or better on those Post Assessment exams with 10 or more problems, or miss no more than one problem on those with fewer than 10 problems, before being allowed to go on to the next math module.

Information

To change a percent to a decimal, remove the % sign, then place a decimal point two digits to the left of the number for the given percent. (If the percent is a mixed number, change the fraction to a decimal and place this value after the whole number.)

Use the decimal value for the given percent the same as any other decimals to perform the required mathematical operations.

To change a decimal to a percent, move the decimal point two digits to the right. Place the percent sign after this number.

Self Assessment

The bill for a certain job is $332.20. If the customer wishes to pay 15% on the original bill, what should she pay?

During the first four days of a work week, the total daily output reached 276, 320 342, and 286 welds of a certain type. The rejects each day of these totals were 5%, 4.5%, 6% and 5%, respectively. The weekly quota to meet a contract is 325 perfect welds per day. How many welds must be produced the fifth day to meet the schedule? (Assume that the rejects on the fifth day is the average percent of the other four days.)

Write the letter of the correct, or most nearly correct, answer in the blank at the left of each problem.

____ The fraction 9/16 is equivalent to what percent?

a. 9.16
b. 56
c. 56 1/4
d. 565

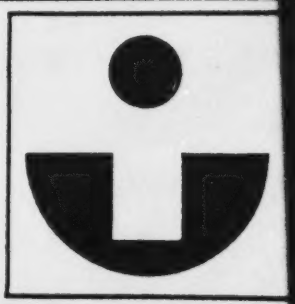
____ The fraction 3/32 is equivalent to what percent?

a. 3 1/32
b. 3 30/32
c. 9 3/8
d. 93 1/8

____ The fraction 9/32 is equivalent to what percent?

a. 28
b. 28 1/32
c. 28 3/32
d. 28 1/8

Self Assessment Answers



She should pay 332.20 X .15 or $49.83

490 welds

9/16 = c

3/32 = c

9/32 = d

Post Assessment

Listed below each problem are four possible answers. Decide which of the four is correct, or most nearly correct; then write the letter for that answer in the space to the left of the problem.

1. ____ Expressed as a fraction in lowest terms, 43 3/4 percent is:

   a. 7/32
   b. 7/16
   c. 43/40
   d. 46/4

2. ____ Expressed as a fraction in lowest terms, 62 1/2 percent is:

   a. 5/8
   b. 6/8
   c. 62/80
   d. 62 1/2

3. ____ Expressed as a fraction in lowest terms, 83 1/3 percent is:

   a. 5/6
   b. 10/16
   c. 8/9
   d. 1 4/3

4. ____ A certain type of glass is composed of 63 percent silica sand, 23 percent soda ash, and 14 percent lime. The total batch of glass weighs 1,600 lbs. How many pounds of soda ash are in the batch?

   a. 224
   b. 368
   c. 472
   d. 592

5. ____ Two glaziers install 2,100 lights of glass, but 84 lights turned down by the inspectors have to be reputtied. What percent of the job has to be done over?

   a. 2
   b. 4
   c. 20
   d. 40

6. ____ The finished width of a certain shiplap sheathing board is 1 5/8". What is this width in decimal form?

   a. 1.525"
   b. 1.575"
   c. 1.580"
   d. 1.625"

7. ____ A roof has an area requiring 476 running feet of a certain kind of insulating material. If 28 percent is to be added for cutting and waste, how many running feet of the material should be ordered, to the nearest foot?

a. 606
b. 608
c. 609
d. 623

8. ____ A tilesetter purchases a table saw at $475 less separate discounts of 15 percent and 3 percent. What is his actual cost?

a. $389.65
b. $391.64
c. $392.74
d. $394.46

9. ____ A portable electric circular saw has a speed of 4,000 rpm under full load. Under no-load conditions, the saw's speed increases 15 percent. What is the no-load speed?

a. 4,250 rpm
b. 4,400 rpm
c. 4,550 rpm
d. 4,600 rpm

10. ____ The total cost of a new building is $35,450. If the cost of the roof is 2 percent of this total amount and if the roofing materials represent 27 percent of the cost of the roof, what is the cost of the roofing materials?

a. $152.97
b. $167.50
c. $175.21
d. $191.43